

The Barb Mill
Birdhaven, Shenandoah County, Virginia

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PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY
Philip N. Stern, District Officer
21 Law Building
Fredericksburg, Virginia

THE BARB SAW-MILL
Birdhaven, Shenandoah County, Virginia.

Owner: (Original: Gabriel Sager
) Present: Philip Barb

Date of Erection: e. 1777 1790 (House was built about 1777)

Architect: Probably none: builder did the planning.

(Original mill: Gabriel Sager
Builder: (Present Mill: Philip Barb

Present Condition: In 1935 dilapidated but capable of running with slight repair and overhaul.

Number of Stories: One: not really a building: it is a working platform of timbers carrying the saw, the driving machinery beneath, and little or no protection from weather.

Materials of Construction: White oak, iron, limestone.

Other Existing Records: U.S. tax receipts, 1812 and 1813, said to mention this sawmill, and also a grist mill now destroyed.

Additional Data: The Barb Mill:

The water driven mills, one a saw-mill, and the other a grist mill, have existed a long time on this location, the power coming from Elk's Run. The original saw-mill may have been installed as early as 1790. In 1812 and 1813 the Government collected a tax and the receipts mentions both the saw-mill and the grist mill. The original mill had "up and down-saw" driven by a flutter wheel. The wheel was 3ft. in diameter and 4ft across the face. Barb states that it was located at the foot of a 14ft. vertical penstock which was 8ft. square and conducted a heavy falling stream into the buckets of the flutter-wheel. There was a crank directly on the flutter wheel which drove the vertical saw. It should be understood at this point that iron was exceedingly scarce in the pioneer days and that the vast bulk of all such construction was of white oak.

The flutter wheel mill may have been in operation (with repairs) for about 90 years as the first "over-shot"

wheel was installed in 1880 occupying the space once used by the penstock of the flutter wheel. It is probable that this over-shot wheel still used a vertical saw as I saw the old blade hanging on the side of an outbuilding at the time of my visit. My idea is that a circular saw was not introduced until 1924 at the time the present existing over-shot wheel was built. Barb states that the "up and down-saw" had a capacity of about 100 bd.ft. per day of pine; in oak not over 75 ft. The present circular saw mill under favorable conditions can cut 1500 ft. per day of pine.

The present over-shot wheel is constructed almost entirely of white oak sawed out by the previous mill and strengthened by iron cross bolts several feet in length and having iron gudgeons to carry it on its bearings. The dimensions of this wheel are as follows:

The width across the face is 4ft. 6in.

The diameter is 17ft. 2in.

Through the center is a white oak spindle 22in.

in diameter and 16½ft. long, hewed 16 square.

From the spindle radiate 16 arms, 2½ x 7 in.

of white oak.

Across the face of the wheel are 56 buckets which catch the water.

This wheel develops about 11 H.P. with full water.

It is mounted on two masonry columns about 2 x 5 ft. cross section and 7 ft. high, each of which carries a head block of solid white oak bolted into the stone.

The ends of the spindle carry mortised recesses at right angles into which fit iron gudgeons.

These gudgeons are bearings 4in. in diameter which carry four projecting iron wings which fit into the mortises mentioned above.

The bearing surface of the gudgeon is 5in. long.

The gudgeon is firmly secured in place by shrinking two heavy iron bands around the wooden spindle over the section occupied by the wings.

One masonry column is close to the wheel but the spindle projects far through on the other side to a point under the mill machinery where the other masonry column is located.

The far end of the wooden spindle carries a 14ft. wooden wheel having iron cog teeth around its perimeter and these teeth drive the mill machinery.

The most remarkable feature I observed in this mill is that the iron bearings of the gudgeons turn, not in iron, but in blocks of selected lime stone

bedded into the oak caps on the pillars. The reasons for this are that there is a constant splash of water which would wash grease out of the bearings and would no doubt rust a stationary part badly. The iron axle, however, runs in the close grained lime stone and polishes a surface which does not rust, takes the wear well and operates without lubrication except the splash of the water. This is similar to the jewel bearings of a watch.

The Grist Mill:

The Barb plant formerly included a grist mill of old type, housed in a separate stone building which is now in ruins. The two mill stones are of the old familiar type, one stationary and the upper stone revolving upon a pivot which is capable of adjustment so that the space between the stone can be regulated for fine or coarse grinding. The grain is poured into a center hole in the upper stone and works out through radial grooves cut in the opposing stone surface, the flour falling out over the end of the lower stone.

*R. V. Reynolds' Co
Forest Service*